

## ABSTRACT

A wavelength separation device is provided comprising a plurality of optical heterostructures. The optical heterostructures are characterized by distinct transmission bandwidths. Each of the plurality of optical heterostructures comprises a first bandgap region and a second bandgap region defined in a matrix of the optical heterostructure. The first bandgap region defines a first optical bandgap of the optical heterostructure. The second bandgap region defines a second optical bandgap of the optical heterostructure. The first optical bandgap of the optical heterostructure is centered at a different wavelength than the second optical bandgap of the optical heterostructure such that one of the transmission bandwidths is defined between the first and second optical bandgaps.

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